

SERCULATE: A CPR Developed for an Exercise Rehabilitation Research Facility.

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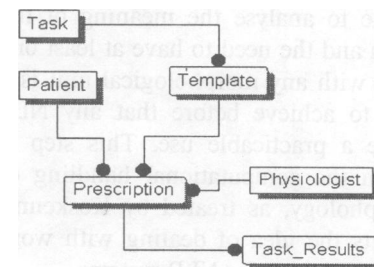
Introduction. Exercise conditioning and rehabilitation can be used as primary interventions to improve the functional independence and reduce risk for cardiovascular complications in the elderly with hypertension, diabetes and hyperlipidemia and in patients disabled by peripheral arterial vascular disease, congestive heart failure, or stroke. Information technology can be implemented to develop a system which significantly increases the efficiency of the processes developed in support of research in exercise rehabilitation. Such a system could generate exercise prescriptions, collect, store and retrieve exercise data, track patients and generate patient feedback reports. The development of a Computer Based Patient Record (CPR) in support of research in exercise rehabilitation presents some unique challenges, namely that such a system be able to support research data collection and analysis as well as provide the ability to generate exercise prescriptions and feedback reports.

Methods. The present system SERCULATE was developed in support of the Senior Exercise and Rehabilitation Center (SERC), a new exercise rehabilitation facility co-funded by the Baltimore VAMC(BVAMC) and the University of Maryland at Baltimore, School of Medicine (UMSM).

Prior to the development of the current information the complete process from prescription generation to data collection and patient follow-up was implemented on paper. The old system was labor intensive and cumbersome, requiring physiologists and investigators to manage a large volume of patients and data.

A system was designed with three major components:

1. A centralized relational database to support research data storage and retrieval.
2. A GUI front end to support data entry/editing.
3. PDA's to support portable data collection and entry.



ERD

The database itself is housed on a networked PC located in the center of the facility. The computer has a dedicated parallel printer which prints patient's prescriptions. The ERD was implemented as a relational database in Microsoft Access. The GUI was developed in the same environment.

Conclusion. The dynamic generation of prescriptions in diverse therapy and treatment areas is an important general problem for CPRs. We have presented a general solution as a database design that can be integrated in other applications that need this functionality.

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